

Case Report

Cervicothoracic syringomyelia caused by cervical spinal stenosis: Case report and literature review

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Received: 22 September 17 Accepted: 08 October 17 Published: 06 December 17

Abstract

Background: Syringomyelia is commonly associated with Chiari malformations, spinal trauma, arachnoiditis, or tumors. However, rarely, cervical canal stenosis is implicated in intramedullary cavitations.

Case Discription: Here, we report the case of a 60-year-old male patient who presented with loss of pain and temperature sensation in upper extremities associated with a spastic tetraparesis. On magnetic resonance imaging, the patient was found to have syringomyelia extending from C1 to Th3. Following posterior decompressive surgery, the syrinx resolved along with the patient's neurological complaints.

Conclusion: Here, the authors presented a case and reviewed the literature regarding how cervical spinal stenosis may contribute to cervical or thoracic syringomyelia.

Key Words: Cervical canal stenosis, surgery, syringomyelia

Access this article online

Website:www.surgicalneurologyint.com**DOI:**

10.4103/sni.sni_350_17

Quick Response Code:

INTRODUCTION

Syringomyelia is characterized by a cystic, fluid-filled cavity presenting inside the spinal cord.^[1] The various etiologies of syringomyelia include craniovertebral junction abnormalities (e.g. Chiari malformation, basilar invagination), meningitis, intramedullary tumors, hemorrhagic, and/or posttraumatic spinal injuries.^[4]

However, rarely has cervical spinal stenosis/spondylosis contributed to the formation of a cervicothoracic syrinx.^[5,6,11] Here, we present a case of cervical canal stenosis resulting in C1–T3 syrinx formation, and provide a literature review.

CASE DESCRIPTION

A 60-year-old male presented with a 1-year history of a traumatic, increasing radicular pain and loss of pain and temperature in the upper extremities, accompanied by a severe and spastic tetraparesis. Neurological examination

revealed mainly spastic tetraparesis and syringomyelic syndrome in the upper limbs. The cervical magnetic resonance imaging (MRI) on T2-weighted studies showed circumferential spondylotic (cervical spondylosis and osteophytes, and posteriorly by ligament flavum hypertrophy) compression at the C3/C4, C4/C5, and C5/C6 levels [Figure 1a]. MRI on T1-WI has also revealed a cervicothoracic syringomyelia extending from C1 to T3 [Figure 1b].

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How to cite this article: Badri M, Gader G, Bahri K, Zammel I. Cervicothoracic syringomyelia caused by cervical spinal stenosis: Case report and literature review. *Surg Neurol Int* 2017;8:288.

<http://surgicalneurologyint.com/Cervicothoracic-syringomyelia-caused-by-cervical-spinal-stenosis:-Case-report-and-literature-review/>

Table 1: Literature review of syringomyelia secondary to spinal cord compression

| Author | Year | Age | Spondylosis level | Proposed mechanism | Treatment | Clinical follow-up | Radiological follow-up |
|---|------|-----|------------------------------------|--------------------|--|--------------------|------------------------|
| Rebai <i>et al.</i> ^[11] | 2002 | 70 | NA | Spondylosis C2-C6 | Decompressive laminectomy C1-C6 | Improved | Resolution |
| Kimura <i>et al.</i> ^[6] | 2004 | 64 | C4-C5; C6-C7 | Spondylosis | C4-5 and C6-C7 dissectomy + cage | Improved | Resolution |
| Butteriss <i>et al.</i> ^[11] | 2006 | 70 | C5-C6 | Spondylosis | No treatment | | |
| Landi <i>et al.</i> ^[9] | 2013 | 66 | C3-T1 syrinx, spondylosis | | 4-level laminectomy and posterior fusion | Mild improvement | Increased syrinx |
| Venkata <i>et al.</i> ^[13] | 2014 | 53 | C4-C6 spondylosis | | C3-C4 laminectomy for holocord syrinx | 6 months improved | Resolution |
| Our case | 2017 | 60 | Cord Compression C3-C6 spondylosis | | C2-C6 laminectomy | Symptoms improved | Reduced Syrinx |



Figure 1: (a) Preoperative sagittal T2-WI MRI showing stenosis of the cervical spine. (b) Sagittal T1-WI MRI revealing a syringomyelia as a central spinal cord hypointensity extended from C1 to T3

Following a C2–C6 cervical laminectomy, the patient fully recovered. The MRI obtained six months postoperatively showed complete regression of the prior syrinx [Figure 2].

DISCUSSION

Syringomyelia is associated with numerous different pathologies, including spinal trauma, Chiari malformation or other craniocervical anomalies, meningitis, but rarely, cervical spondylosis.

Etiologies of syrinx with cervical spondylosis

Theories leading to syrinx formation secondary to cervical spondylosis include ischemia,^[13] microtrauma (resulting in myelomalacia and cavitation),^[3] a sloshing effect secondary to a local block in cerebrospinal flow,^[6] and dissociation of pressure above and below the block leading to transmural fluid movement.^[7]

Treatment options for cervicothoracic syrinx

Although there are various treatment options for cervical-thoracic syrinx due to Chiari malformations (e.g., foramen magnum decompression and syringosubarachnoid shunt), there are no established procedure for dealing with syringes due to cervical spondylosis with immediate regression of the intramedullary cavitation and symptoms [Table 1].^[2,8]



Figure 2: T1 WI MRI at 6 months postoperative showing resolution of the syrinx

The regression of the syringomyelic cavity in our patient, and in other reports, is that the relief of epidural compression is the main element in the pathophysiology of the formation of syrinx.^[10,12]

CONCLUSION

Cervicothoracic syringomyelia attributed to cervical spondylosis is rare. Here, surgical decompression, consisting of a C2–C6 laminectomy, addressing circumferential spondylotic changes resulted in the regression of symptoms and complete radiological resolution of the syrinx.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initial will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

None.

Conflicts of interest

There are no conflicts of interest.

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